Massive Removal of Small Bowel During Criminal Abortion

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Perforation of the gravid uterus is a well-documented complication of instrumental abortion. Small-bowel damage in such perforating injuries necessitates prompt treatment. Four such cases have been reported in the English literature.

Case History

A West Indian woman aged 23 presented with a history of lower abdominal pain of 24 hours' duration, together with vaginal bleeding. She was accompanied to the hospital by her own doctor, who brought a polyethylene bag containing a quantity of soft tissue. The patient claimed that her doctor had removed this from her vagina on two separate occasions—namely, 24 hours and 1 hour before admission. It appeared to be small bowel devoid of mesentery, measuring 360 cm. in total length (Fig. 1). It was thought possible

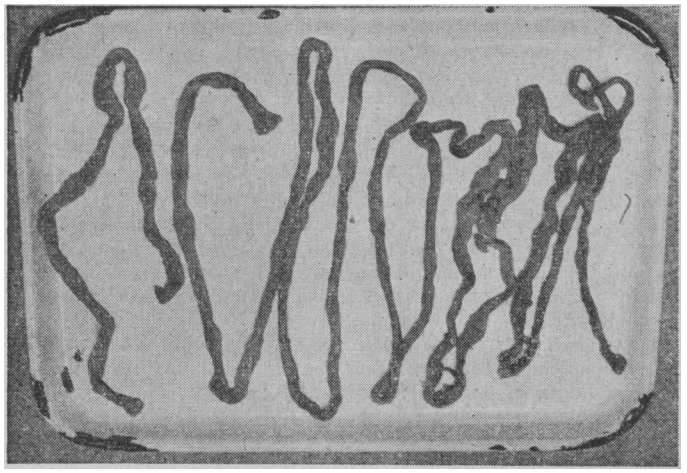

FIG. 1.—Small bowel devoid of mesentery, measuring 360 cm. in total length, brought by the patient.

that it had been removed via the vagina in association with attempted criminal abortion.

Her last menstrual period was eight weeks previously, and she was pregnant for the second time, having one child aged 3 years.

On examination the patient was not shocked. The pulse was 100, blood-pressure 130/70, and temperature 100° F. (37.8° C.). The chest was clinically clear and the breasts were positive for pregnancy. The lower abdomen was tender, with guarding and rebound tenderness. An indistinct mass was felt in the suprapubic region. Clinically there was no evidence of intestinal obstruction. Bowel sounds were absent. She was tender in the pouch of Douglas on rectal examination.

Vaginal examination revealed a watery blood-stained discharge. The vagina and cervix showed no evidence of trauma. The fornices were intact. With a speculum a portion of necrotic tissue measuring 6 by 1 cm. was seen projecting from the cervical canal ; it was identified as gangrenous small bowel, traction on which produced acute abdominal pains.

In view of the implications the police were informed, and later they provided the following facts. The patient and her husband had attended a doctor's surgery 30 hours previously for the purpose of an abortion. The doctor was called to the patient's home six hours later, when he discovered bowel protruding through the vagina and apparently removed it. Approximately 24 hours later he was called again, when an even larger amount of small bowel was removed.

Laparotomy

The abdomen was opened through a right lower paramedian incision. The pelvis contained 100 ml. of stale blood together with a mass consisting of gangrenous small bowel and uterus covered with omentum. Separation of this mass revealed 30 cm. of gangrenous jejunum and ileum intussuscepting through a laceration measuring 2.5 by 2.5 cm. in the fundus of the uterus to the left of the midline. A second laceration measuring 2.5 by 1 cm. (Fig. 2) was noticed over the posterior surface of the body of the uterus, through which a segment of gangrenous small bowel 1 cm. in length had re-entered the peritoneal cavity. It appeared that the bowel was strangulated by the contracted uterus. The bridge of uterine tissue between the two lacerations was divided so as to deliver and identify the proximal gangrenous cut end, which was lying free in the uterine cavity. A portion of distal cut end measuring 1 cm. had re-entered the peritoneal cavity through the second laceration. It was evident that a large portion of small bowel between these two cut ends had been removed. The blood-vessels in the margin of the torn mesentery had retracted and clotted. The gangrenous small bowel (Fig. 3) was excised, particular care being taken to preserve all viable bowel and the ileocaecal valve. Continuity was re-established by end-to-end anastomosis.

The uterus showed considerable damage, with evidence of haematoma in the parametrium and between the layers of the broad ligament. A third laceration 2 by 2 cm. was discovered at the junction of the body with the cervix on mobilizing the uterus. The posterior wall of the bladder was bruised but not perforated. Total

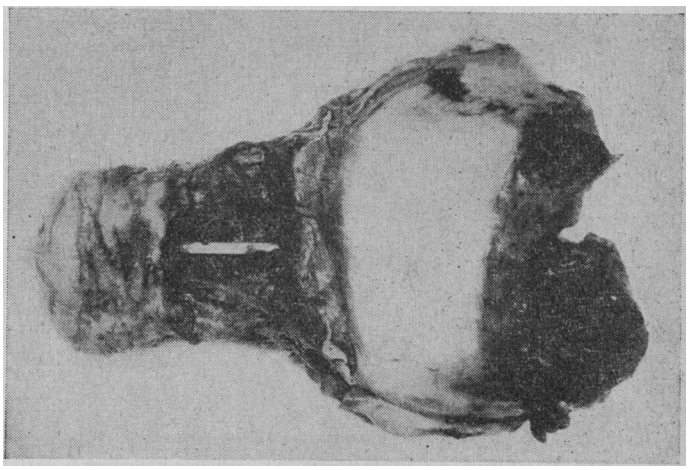

FIG. 2.—Uterus showing lacerations over the fundus and junction of the body with the cervix.

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hysterectomy with conservation of appendages was performed. On its completion approximately 105 cm. of healthy jejunum and 5 cm. of terminal ileum remained. One litre of blood was transfused during the operation.

Post-operative Course

The patient remained ill for 48 hours after operation, but subsequently made good progress. Diarrhoea occurred on the fifth post-operative day with two to three watery motions daily, which increased to six by the seventh post-operative day. During this period nutrition was maintained by intravenous 5% aminosol-fructose-ethanol and 20% Intralipid. Subsequent management was carried out in the nutritional and intestinal unit by one of us (B. J. S.).

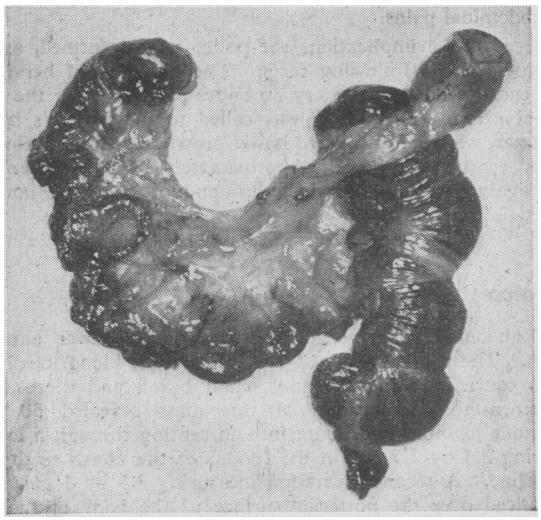

FIG. 3.—Excised segment of gangrenous small bowel at operation.

Long-term Management

After operation approximately 110 cm. of small bowel remained, mostly jejunum. This was confirmed radiologically (see Fig. 4); the upper portion appears normal and the lower a little widened but retaining the fine jejunal pattern of mucosal folds. Haymond (1935) maintained that normal life could continue after removal of one-third of the small bowel, but that where more than 50% was removed major problems of management arose. Since then, however, there have been several reports of patients surviving when as much as two-thirds of their small bowel had been excised, without having major metabolic disturbances (Jackson, 1958). In the case here described about 20% of the small bowel has been left. There is a record of a patient surviving for many years with only 18 cm. of jejunum (Linder *et al.*, 1953).

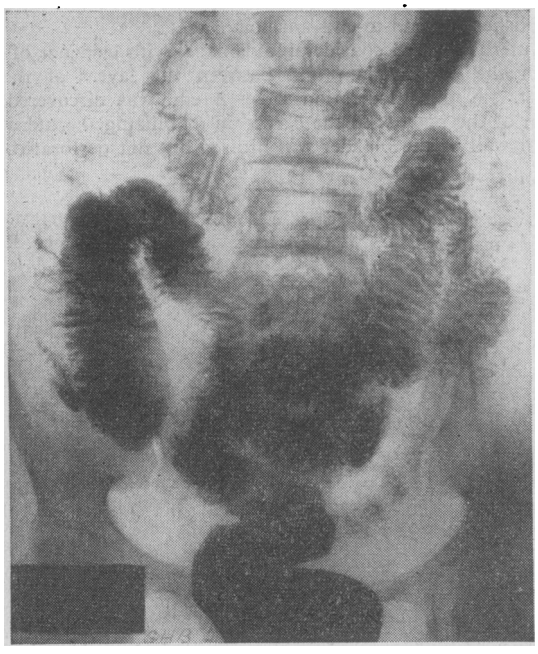

FIG. 4.—Barium meal post-operatively, showing the short segment of jejunum. Note the presence of barium in the transverse colon 15 minutes after the ingestion.

On the patient's recovery from operation and recommencing diet, profuse diarrhoea developed as expected. With only a poor appetite and a dietary fat intake of approximately 40 g. a day, 6 to 12 watery motions totalling approximately 1 litre occurred. The faecal fat output during this period ranged from 10 to 21 g. a day. Three weeks after operation she was maintained for an experimental period of 10 days on a synthetic diet, in which normal dietary long-chain triglyceride was replaced by fat of a medium chain-length, consisting mainly of tricaprylin and tricaprin. This resulted in a marked reduction of the volume of faeces and the number of bowel actions. Steatorrhoea disappeared and normal faecal fat levels were achieved. Thus although absorption of normal dietary long-chain triglyceride was impaired, she was able to absorb fats of medium chain-length (Smits *et al.*, 1966). On leaving hospital, therefore, maintenance included a diet low in long-chain triglyceride (maximum 40 g./day) but supplemented by medium-chain triglyceride.

The patient weighed 44.5 kg. before her accident; in the immediate post-operative period this fell to 38 kg., and in the subsequent 10 months there was a slight rise to 39.5 kg., while taking reasonable doses of medium-chain triglyceride. It had been hoped that further gain in weight might be achieved. There is, however, considerable evidence that medium-chain triglyceride, though well absorbed here, is utilized by the body mainly for the provision of calories, and is stored only to a small extent (Powell, 1932; Reiser and Bryson, 1951). In fact, medium triglyceride was not tolerated well and at the time of writing none was being taken. The weight remains steady, and she has two or three bowel actions a day, depending on dietary intake. An important factor here is undoubtedly the preservation of the ileocaecal valve.

Where bowel resection has been extensive fat absorption is most affected; to a less extent protein, and still less carbohydrate (Jackson, 1958). Plasma protein levels have been well maintained over 12 months, with a serum albumin of 4.0 and globulin of 2.7 g./100 ml. At least 120 g. of protein daily where possible has been advised, and at no time has any oedema developed. Defective absorption of fat-soluble vitamins and of calcium and phosphorus is likely to occur. After 12 months the levels respectively are 9.3 mg. of calcium and 3.5 mg. of phosphorus per 100 ml.; the alkaline phosphatase is constant at 6 K.-A. units. There is as yet no evidence of skeletal demineralization. Prothrombin time is slightly prolonged, with an index of 75%. However, there is continued excretion of considerable fat, ranging over the past six months from 26 to 35 g. a day, in the faeces. There is no evidence of iron depletion, but with the loss of most of the terminal ileum and the inability therefore to absorb vitamin B_{12}, there has been a steady fall in the serum vitamin-B_{12} level. Radioactive vitamin-B_{12} absorption (Fone *et al.*, 1961) showed complete absence of absorption, and the serum level fell in 12 months from over 500 $\mu\mu$g./100 ml. to 305 $\mu\mu$g./100 ml. Folic acid (*Lactobacillus casei*) appeared to be falling at one period, but at the time of writing was normal, as one would expect, the site of folic-acid absorption being high in the bowel. Megaloblastic anaemia is likely to develop, therefore, when vitamin-B_{12} stores are depleted. When the patient was last seen there was a slight degree of anaemia with a mean haemoglobin level over the past three months of 11.6 g./100 ml., as opposed to 13 g./100 ml. in the previous nine months. There was no evidence of macrocytosis, with a mean cell volume of 86 cubic microns.

Discussion

Consideration must be given, both in the immediate post-operative period and later, to adequate electrolyte maintenance, including potassium supplementation where necessary. Also, small frequent meals are essential initially, but in time meals of normal size and frequency may be taken. There is some evidence that improvement of the small-bowel function in this type of case may possibly be effected with time, as a result of hyperplasia of the small-bowel mucosa (Porus, 1965).

Wolff and Limarzi (1946) reported the case of a 30-year-old woman presenting with 50 cm. of gangrenous small bowel prolapsing through the internal os. The bowel was devoid of its mesentery, and at operation 150 cm. of gangrenous small bowel was excised. The perforation in the uterus measured 3 cm. She made a good recovery. Simon, Kaufman, and Mastellone (1951) described the case of a woman aged 25 who presented with small bowel prolapsing through the internal os. It was at least three days before laparotomy and resection of the damaged bowel was carried out. In spite of the delay her general condition remained satisfactory. After the operation she made a good recovery. Potts and Petzing (1953) and Howkins (1952) recorded one case each of bowel injury associated with perforation of the gravid uterus.

An astonishing feature of these three cases reported from the United States and of our case was the absence of shock in spite of severe damage to the small bowel culminating in gangrene. This is probably due to the minimal bleeding as a result of retraction and clotting of the torn mesenteric vessels, and also partly to the " tourniquet " effect of uterine retraction. In the case reported by Howkins, though the general condition was satisfactory initially, the patient progressively deteriorated as the bleeding continued unarrested into the peritoneal cavity.

Furthermore, the absence of purulent peritonitis even after 24 hours of the assault was striking in our patient. This, we believe, was due to the isolation of the cut ends of the bowel within the uterine cavity. With the lapse of sufficient time perforation of the gangrenous bowel and fulminating peritonitis would no doubt have proved fatal.

This young woman remained well one year after loss of all except approximately 20% of her small bowel. Her weight remained steady, though below normal. She seemed likely to develop vitamin-B_{12} deficiency in the near future if not treated ; otherwise there had been no major metabolic disturbance, though she continued to have very considerable steatorrhoea.

Summary

A West Indian woman aged 23 was admitted with a history of lower abdominal pain and vaginal bleeding of 24 hours' duration. A total of 360 cm. of small bowel was removed during criminal abortion. At laparotomy a further segment of gangrenous jejunum and ileum was excised, together with a lacerated uterus. On completion, approximately 105 cm. of healthy jejunum and 5 cm. of terminal ileum remained. Postoperatively, profuse diarrhoea and steatorrhoea occurred, in consequence of which she was maintained for an experimental period of 10 days on a synthetic diet consisting of medium-chain triglyceride, with the disappearance of steatorrhoea and return of normal faecal-fat levels. At the end of one year her weight remained steady.

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Medical Memoranda

Blue Rubber Bleb Naevus

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Bean (1958) coined the term " blue rubber bleb naevus " for a syndrome of a particular type of vascular naevus having the appearance of vascular bladders on the skin and mucous membranes and at times associated with gastro-intestinal bleeding. Only about 12 cases of the condition have been reported, and the latest reviews are by Rice and Fischer (1962) and Butterworth and Strean (1962). The purpose of this paper is to describe two more cases, one with very widespread naevi and the other showing few scattered lesions. Both cases demonstrate some differences from those previously recorded, notably the absence of pain and sweating of the lesions and the history of bleeding from sites other than the gastro-intestinal tract. The two patients also show inheritance through three and five generations respectively. Histological features and the differential diagnosis are discussed. Both cases were shown at the clinical meeting of the British Association of Dermatology Annual Meeting in July 1965.

Case 1

A woman aged 56 had had a blue nodule at the right outer canthus since infancy, and this, together with a small lesion near the mouth, was removed by Mr. Denis Bodenham in 1948. When aged 39 further lesions in groups on the left upper arm and right shoulder and a few scattered in other areas of the body started to develop. Some lesions apparently followed pregnancies or occurred at injection sites. They have not given rise to pain but were slightly tender on pressure. She has had attacks of frequency and urgency of micturition and one episode of haematuria three years ago. Menorrhagia developed just before the menopause two years ago. There was no history of bleeding from other sites. The affected members of the family are shown in Fig. 1.

General and gynaecological examination revealed no significant abnormalities. Blue haemangiomata ranging in size from 2 to 20 mm. in diameter were present on the right shoulder, left arm, hands, legs, and left heel. Some larger lesions were surrounded by smaller satellites. The lesions were slightly tender on handling. Pressure emptied the haemangiomata of blood and gave a sensation of a gap in the underlying tissue. The mucous membranes were not affected. No excessive sweating was apparent over the lesions even after heating the limb encased in polyethylene.

Investigations.—Blood count normal. Occult blood tests on stools negative. Repeated specimens of urine showed no erythrocytes,